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Procedia Social and Behavioral Sciences 2 (2010) 3270–3273

Procedia
Social and Behavioral Sciences

WCES-2010

Supporting online collaboration: Drawing guidelines from an empirical study on E-Tutors

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Received October 27, 2009; revised December 3, 2009; accepted January 14, 2010

Abstract

In the last two decades, the epistemic-engagement view has become the dominant frame of reference in the field of e-learning. In this view, learning is assumed to emerge from social interaction (Larreamendy-Joerns & Leinhardt, 2006). Literature indicates a number of potential interventions in order to make interaction possible and more effective. But little is known about the e-tutors' beliefs and practices, e.g. how they intervene on the design and management of Computer-Supported Collaborative Learning (CSCL) courses in order to foster learners' social interaction and knowledge construction. In the framework of a European project, the present study investigated how and when e-tutors intervene in respect to support online collaboration in CSCL. The project was meant at providing ICT-practitioners with guiding principles drawn from empirical research in social psychology of education concerning the complex relationships between social interaction and cognitive activities. Results show that the importance of some cognitive and social processes (e.g., social dynamics, collaboration feedback, etc.) still appears to be in part neglected by e-tutors.

Keywords: Learning psychology; distance education; human resources in education; educational technology.

1. Introduction

In the last two decades, the epistemic-engagement view has become the dominant frame of reference in the field of e-learning. In this view, learning is assumed to emerge from social interaction, namely from learners-tutor-content exchanges (Larreamendy-Joerns & Leinhardt, 2006). There is ample empirical evidence that cognitive processes necessary for deep learning and information retention occur in social interaction and that "collaborative learning" is the "royal road" to knowledge acquisition (e.g. Kreijins et al. 2003). Despite the accumulation of research on the effectiveness of collaborative learning, learning and co-construction of knowledge are not an inevitable consequence of allowing students to interact with each other (e.g. Mandl et al., 2006) and just placing students in groups does not guarantee collaboration: social interaction does not take place automatically just because an environment makes it possible from the technological point of view. Literature indicates a number of potential interventions in order to make interaction possible and more effective for learning. But little is known about the e-tutors' beliefs and practices, e.g. how they intervene on the design and management of Computer-Supported Collaborative Learning (CSCL) courses in order to foster learners' social interaction and knowledge construction.

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doi:10.1016/j.sbspro.2010.03.500

In the framework of a European project aimed at recognizing practical guidelines to promote collaboration in CSCL, the present study intended investigate how and when e-tutors intervene in respect to support online collaboration in CSCL. The European project *"Social networks and knowledge construction promotion in e-learning contexts"* meant at providing ICT-practitioners with guiding principles drawn from empirical research in social psychology of education concerning the complex relationships between social interaction and cognitive activities. Starting from the results of the empirical study and from the following phase of the project, practical guidelines have been identified (for more details, see Matteucci, 2007; 2008; Matteucci et al. in press).

2. Socıal interaction, collaboration and co-construction of knowledge

In the last two decades, the approach of many scholars in the field of e-learning has shifted from the presentational and the performance-tutoring views, in which interaction is mostly conceived as the possibility to perform effective exchanges between a learner and a technological environment, toward the epistemic-engagement view, in which learning is assumed to emerge from learners-tutor-content exchanges (Larreamendy-Joerns & Leinhardt, 2006).

Although ICTs can fit to the implementation of CSCL, collaboration and co-construction of knowledge are not an inevitable consequence of allowing students to interact with each other: learning does not happen just because technological tools and pedagogical devices make it possible. But they are necessary in order to make social interactions possible and effective for learning. Based on an input-process-output model (Hackman, 1983), there are a number of interventions possible to make interaction more effective for learning. Input variables include individual- (e.g., learners' prior skills) and group-level factors (e.g., group size), the didactical design (more or less structured), the support methods (e.g., scripts, schema), and the technical arrangements (e.g., type of platform, synchronous/asynchronous communication tools, wiki). Process variables include the cognitive activities expected from learners (e.g., problem solving, epistemic activities, argumentation), the social processes (e.g., conflict resolution, social influence dynamics, group goal structure), and the interventions of the teacher/tutor in terms of feedback (content- and collaboration-related). Output variables concern the evaluation of the attained outcomes at the level of either the groups or the individual learners.

Although literature offers abundant indications of possible interventions to enhance the quality of CSCL activities, little is known with respect to the e-tutors' beliefs and practices, i.e., which of the input, process, and output aspects are considered the most important by e-tutors, and upon which of them they mainly exert their interventions.

Therefore, we focused on the following four general aspects of the designing of e-learning courses, which influence learning processes and outcomes:

1. The collaborative online work and the practices used to foster interaction, taking into account the key role of the teacher/tutor. We assume that the design of the learning environment has an influence on the learning processes and represent an essential dimension of interest. In fact, experimental studies indicate that social interactions affect individual cognitive development (Doise & Mugny, 1984). In specific, studies on social influence, argumentation, and reasoning suggest that these advanced cognitive outcomes are more likely to appear when participants are engaged in specific interaction situations.
2. The organization of the online work, starting from the assumption that planning and organizing the online activities enhance collaborative learning and especially that autonomy in learning produce high level of motivation, self-awareness and, thus, better learning (e.g. Deci &Ryan, 2000; Dickinson, 1995)
3. The direct intervention of the teacher/tutor in terms of feedback (content-related and collaboration-related) and of evaluation, since that the benefit of providing prompt and substantive feedback in e-learning settings showed that teaching with feedback is more effective than teaching without feedback (e.g., Schweizer, Paechter, & Weidenmann, 2001).
4. The technical realization of the collaboration, that is, the influence that technological tools exert on the learning scenario while allowing and facilitating collaboration (e.g. Dougiamas & Taylor; 2002).

3. Method

3.1. Participants

A survey of 78 e-learning experiences implemented in 17 European countries was carried out. The sample included mostly higher education/university courses (74%) or experiences of adults' continuing education (19%). 47% of the courses were compulsory, the rest voluntarily. 73% of the courses were implemented several times while for the rest was the first time.

3.2. Instrument

Data were collected using a structured web-based questionnaire, divided into three main sections: input (characteristics of participants, technical aspects, didactical organization), process (cognitive and social aspects of group work and feedback provision), and output features (evaluation of products and processes). Each of these sections included a number of possible interventions carried out by the e-tutor (e.g., promoting argumentation). For each of the listed intervention, the e-tutor was asked to: a) rate the importance of the intervention for the scopes of the course; b) indicate whether s/he performed the intervention in the course; c) describe how the intervention (if any) was carried out, or why it was not.

4. Results

4.1. Input variables

Regarding the characteristics of the tutors and learners, results show that most e-tutors had accumulated experience in the design and development of collaborative online courses, whereas learners were not familiar with CSCL. This means that collaborative online courses are not so widespread in higher and further education, and learners may lack a common ground of prior skills.

Regarding the choice of the technological arrangements, only 37% of the e-tutors were free to choose the most favourite platform; therefore most of them integrated the standard functions of their platform with other external tools, such as Skype, MSN, SMS, or personal e-mail. The most common pedagogical frameworks were c*ooperative/collaborative learning*, *learning by doing*, and *problem/case-based learning*, whereas *knowledge acquisition* and *knowledge application* were indicated as the most common goals. Most e-tutors arranged blended-learning rather than full-distance courses, in order to promote social exchanges among participants.

4.2. Process variables

Results document that e-tutors devote much more attention to the cognitive aspects of group collaborative work (i.e., the epistemic activities), rather than to the social processes involved. Regarding cognitive aspects, e-tutors valued the promotion of the quality of discussion, the circulation of information, and also the quality of argumentation as the most important objects of interventions. Intervention was less frequently mentioned with respect to the support of problem solving activities, or taking into account alternative perspectives in argumentation even though literature suggests that these are often problematic aspects of CSCL.

Regarding the social processes, the majority of e-tutors did not report any intervention. The main reason was that intervention was not necessary. In general, less than 40% of e-tutors reported interventions either to avoid pitfalls in social interactions (e.g., free-riding), or to promote social dynamics that foster individuals' creativity and information processing (e.g., peer-to peer rather than top-down social influence).

Among the process variables, we also considered the provision of feedback. Findings reveal that providing learners with content-specific feedback is judged as more effective than giving feedback on the appropriateness of on-going group work

4.3. Output variables

E-tutors evaluated in most cases the quality of the group outcomes based on criteria such as *effective knowledge application*, *understanding of the content* and *mastery, skilfulness,* whereas only 47.4% of e-tutors intervened to rate the quality of group collaboration during on-going work.

4.4. Guidelines

Following the empirical study, seven e-learning courses (involving more than 440 students in total) were developed in university contexts. The courses intended to promote student construction of knowledge by means of different strategies. Each e-learning course focused on one particular aspect of online collaboration through an

experimental approach to "good practices" within the phases of design and development of e-learning courses (further details may be found in Matteucci, 2007).

Drawing on the results obtained by the empirical study, on the direct experience of e-learning courses and on research evidence concerning the relationship between social interaction and cognitive activities, we detected a catalogue of guidelines. These were presented as pragmatic examples of activities and suggestions for the design and implementation of e-learning courses. They are meant to encourage a more effective development of those cognitive and social processes that characterize collaborative e-learning courses, which comprise activities related to knowledge or information exchange between collaborators (further details may be found in Matteucci, 2008).

5. Conclusion

The study illustrated a variety of practices that e-tutors actually adopt in order to support social interaction and knowledge construction in CSCL environments, and what they value as effective, based on their own experience.

The importance of some cognitive and social processes (e.g., social dynamics, collaboration feedback, etc.) still appears to be in part neglected by e-tutors. More effort is required to educational researchers in order to make e-tutors aware that social interaction does not naturally occur in CSCL environments, and pitfalls in social dynamics may impair learners' attainments. The guidelines identified accordingly may be a practical support to the design and implementation of e-learning activities which foster knowledge acquisition and effective collaborative activities (Matteucci, 2007, 2008; Matteucci et al., in press).

Acknowledgments

A special thanks goes to the Education, Audiovisual and Culture Executive Agency (EACEA) of the European Union, which has allowed and supported the realisation of this project. We would also like to acknowledge the teachers and tutors that have participated to our research and have shared their experience with us, and the students of the e-learning courses that, through their participation to the courses, have contributed to the our study. Last but not least, we thank the colleagues that took part in the final conference and shared their great knowledge with us.

Disclaimer

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein. Authors acknowledge project partners and the EACEA.

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